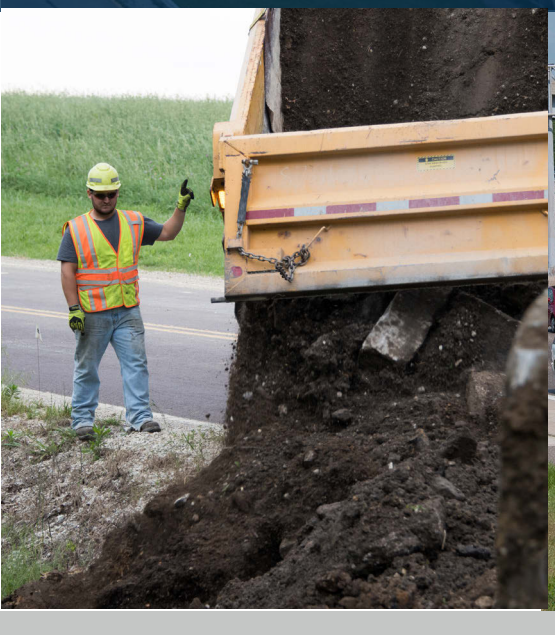
MISSOURI DEPARTMENT OF TRANSPORTATION

FOCUS

STRATEGIC INITIATIVES FOR CONTINUOUS IMPROVEMENT

April 2021

SAFETY • SERVICE • STABILITY



MoDOT

WWW.MODOT.ORG

Controlling the pandemic

MoDOT continued to face the challenges brought by the COVID-19 pandemic through the first quarter of 2021. Thankfully, we've watched the numbers of positive testing of department employees continue to decline. From a high of 199 positive tests reported in December 2020, by mid-April we dropped to only three positive cases. I credit that to the vigilance of our MoDOT family as well as an aggressive screening and vaccination campaign from our Pandemic Response Team. The team worked in collaboration with DHSS, OA, DPS, MSHP, DMAT and SEMA to ensure MoDOT would stay healthy and be able to serve the citizens of Missouri. More than 3,600 MoDOT employees were screened in sentinel, box-in and winter operations testing clinics. Since vaccines became available in mid-January, nearly 2,000 MoDOT employees were vaccinated at DMAT and MoDOT hosted clinics.

We will continue to monitor the impacts of the pandemic until all operations can return to pre-COVID-19 procedures. We continue to follow CDC guidelines to safely manage our operations. Updates and modifications to our processes will be provided as the COVID-19 situation changes.

Telematics increase safety and improve service

This winter season was MoDOT's first using telematics for the entire fleet. This system, also called Automatic Vehicle Locator/Global Positioning System (AVL/GPS), allows maintenance to improve the operating efficiency of the fleet and increase the safety and satisfaction of the traveling public. Though the season was mild when compared to past years, our reaction to a burst of bitter winter weather in February earned MoDOT compliments from the driving public. Missouri Highways and Transportation Commissioner Dustin Boatwright personally made calls to every maintenance superintendent to offer his thanks for a job well done.

Construction output grows

Despite all the challenges of the past year, we were able to record the highest level of construction output in years with nearly $1 billion in payments to contractors. With the possibility of increased revenue on the horizon, the road ahead is looking better all the time.

You are a vital part of our continued success. We need you. Stay safe.

MISSOURI

Department of Transportation

September 2020

ASPIRATION

Our mission is to provide a world-class transportation system that is safe, innovative, reliable, and dedicated to a prosperous Missouri

THEMES

Safety

Moving Missourians Safely

Service

Providing Outstanding Customer Service, Delivering Efficient and Innovative Transportation Projects, Operating a Reliable Transportation System

Stability

Managing Our Assets, Stabilizing Resources and Engaging our Workforce, Building a Prosperous Economy for All Missourians

INITIATIVES

- Improve Work Zone and System-wide Safety with Autonomous Truck-Mounted Attenuators
- Improve Partnerships with Other Agencies and Leverage Private Sector
- Predictive Analytics
  - Optimize winter operations
  - Traffic Management on I-270 in St. Louis
- Pandemic Response to Maintaining Employee Safety and Health

- Improve Project Management Tools
  - Maintenance Management Information System
- Facilities Optimization Strategy Implementation
- Fleet Safety and Utilization with Fleet Telematics
- Implement Enterprise Resource Planning (ERP)
- Update of the State Freight and Rail Plan
- Pandemic Response to Maintaining Essential Services

- Increase Employee Engagement and Recognition
  - Training and Certification
- Research and Deploy Alternative Funding Solutions with Cross-cabinet Collaboration
- Leverage Innovations to Reduce Costs and Improve Service Quality
- SIMS Modernization - Final Phase
- Federal Aid Computer System (FACS) - Phase II
- Pandemic Response to Progressive Cost Control

Missouri Department of Transportation

2020 National Performance Report Card

RANKINGS		
1-10	=	A
11-20	=	B
21-30	=	C
31-40	=	D
41-50	=	F

A — Road Conditions

Current Performance = 91 percent major highways (5,546 miles) in good condition. 81 percent of minor highways (17,334) in good condition.
National Ranking = Missouri had the 7th best pavements on the National Highway System. (FHWA Highway Statistics)

A — Customer Satisfaction

Current Performance = 77 percent satisfied customers
National Ranking = Missouri trails the highest rated company on the American Customer Satisfaction Index by only 7 percent.

A — Administrative Costs

Current Performance = $2,340 cost per mile
National Ranking = Missouri has the 4th lowest administrative cost per mile.

A — Project Management

Current Performance = Missouri road and bridge projects were delivered within 0.7 percent of the award amount and 88 percent were delivered on-time.
National Ranking = Not available.

C — Infrastructure for Business

Current Performance = No internal measure
National Ranking = A CNBC business study ranks Missouri's infrastructure as the 24th best for business.

C — Congestion (travel time index)

Current Performance = Kansas City - 1.15 St. Louis - 1.15
National Ranking =Out of 101 urban areas, Kansas City and St. Louis both ranked at 23rd as some of the least congested areas in the U.S. (Texas Transportation Institute)

D — Number of Fatalities

Current Performance = 880 fatalities
National Ranking = Only 18 states experienced more motor vehicle deaths ranking Missouri 32nd.

F — Bridge Conditions

Current Performance = 9 percent of Missouri bridges in poor condition by deck area.
National Ranking = Missouri ranked 41st for the percent of bridges in poor condition by deck area. *(FHWA Highway Statistics)*

F — Revenue

Current Performance = $57,151 revenue per mile
National Ranking = Missouri has the 45th lowest revenue per mile. *(FHWA Highway Statistics)*

F — Employee Turnover

Current Performance = 12.57 percent
National Ranking = Not available; However, **Stretch Target =** 6 percent. (Price Waterhouse Cooper's Saratoga Institute benchmark data)

Last updated October 2020

MODOTVALUES

	TANGIBLERESULTS
SAFETY Be Safe	Moving Missourians Safely
Be Accountable **SERVICE** Be Respectful Be Inclusive	Providing Outstanding Customer Service Delivering Efficient and Innovative Transportation Projects Operating a Reliable Transportation System
Be Bold Be Better **STABILITY** Be One Team So we can be a great organization	Managing Our Assets Stabilizing Resources and Engaging our Workforce Building a Prosperous Economy for All Missourians

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SAFETY

Moving Missourians Safely

- **Improve Work Zone and System-wide Safety with Autonomous Truck-mounted Attenuators**
- **Improve Partnerships with Other Agencies and Leverage Private Sector**
    - Predictive analytics to optimize winter operations resources
    - Traffic Management on I-270 in St. Louis
- **Pandemic Response to Maintaining Employee Safety and Health**

Improve Work Zone and System-wide Safety

Autonomous Truck-mounted Attenuators

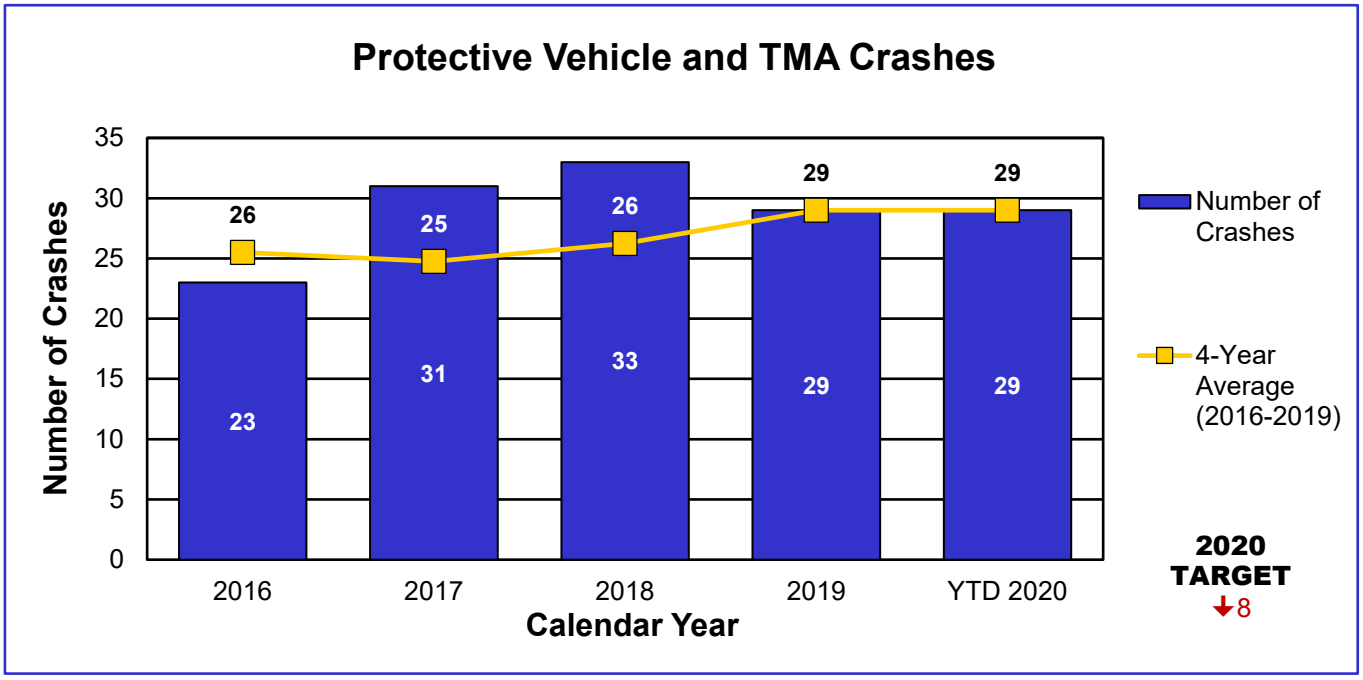
SAFETY CHAMPION:
Becky Allmeroth, Chief Safety and Operations Officer

PROJECT MANAGERS:
Chris Redline, District Engineer

PURPOSE OF THE PROJECT:
MoDOT's commitment to safety applies to it employees and customers. In 2020, Truck Mounted Attenuators (TMA) were involved in 48 crashes with 18 team members seeking medical attention. The typical TMA incident is when a driver is approaching a mobile work zone operation and crashes into the TMA truck. The severity of these crashes ranges from simple 'fender benders' with no injuries to complete collapse of the attenuator and total loss of the heavy-duty dump truck with severe injuries to both drivers and even death. MoDOT is investigating the viability of driverless truck-mounted attenuators to be used in moving operations such as sweeping, striping, and pothole patching. Success of this project could pave the way to eliminate all injuries caused by drivers crashing into the rear TMA.

The project is evaluating leader-follower technology with the goal of removing operators from the rear TMA, the one most crashed into by drivers. During testing the rear TMA is required to have a safety operator with the ability to immediately take over manual control of the truck. The driverless rear TMA simply follows the path of the operator driven lead vehicle at adjustable distances. The system passed Phase 1 testing in May of 2019 but began to exhibit navigation problems during Phase 2 testing in June of 2019. The vendor installed upgrades to improve system performance, but social distancing requirements stopped further testing since two operators need to be in the single cab lead truck. In order to resume testing, our vendor has moved the lead TMA driverless equipment to a crew cab truck so the two operators can be separated by a clear flexible barrier. This change not only helps us resume testing but also will be beneficial for training once the pandemic subsides and social distancing requirements can be relaxed. We expect testing to resume in early May.

Improve Work Zone and System-wide Safety



Improve Partnerships with Other State Agencies and Leverage Private Sector

Optimize Winter Operation

SAFETY CHAMPION:
Becky Allmeroth, Chief Safety and Operations Officer

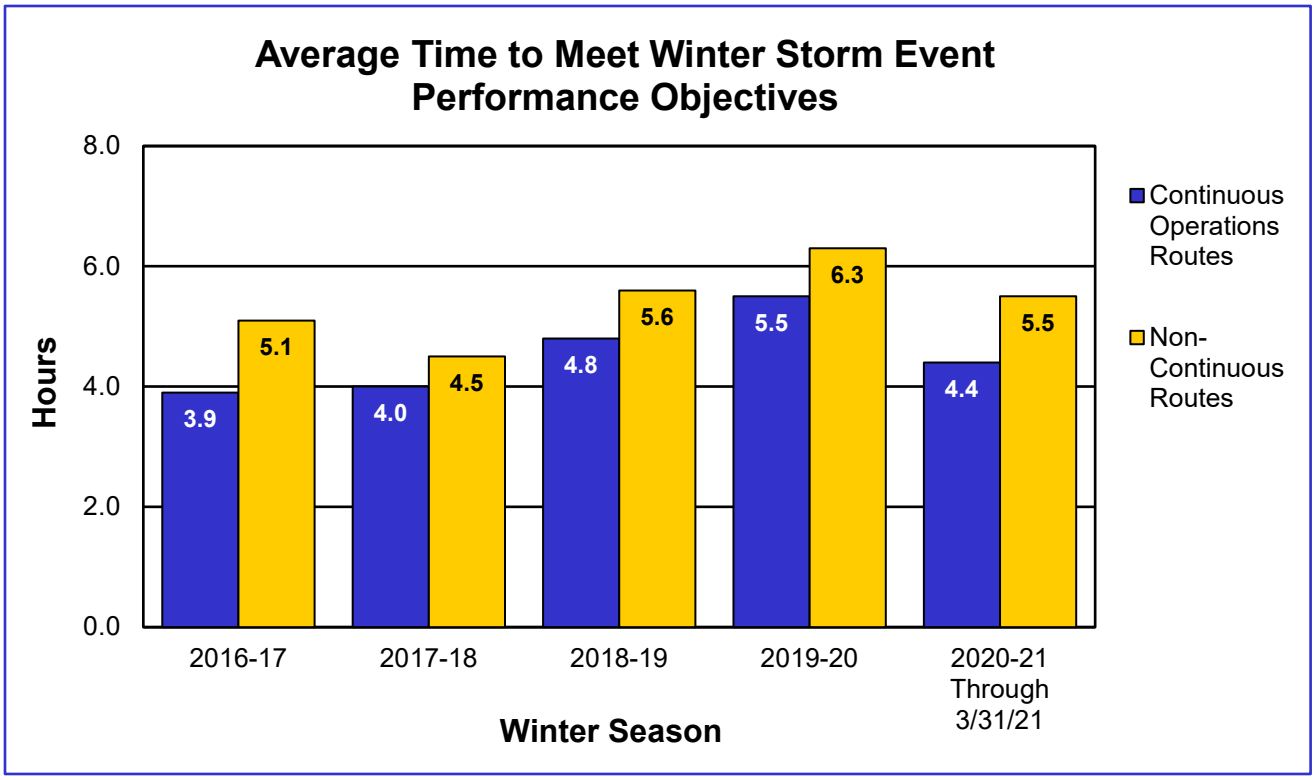
PROJECT MANAGER:
Alex Wassman, Traffic Management and Operations Engineer

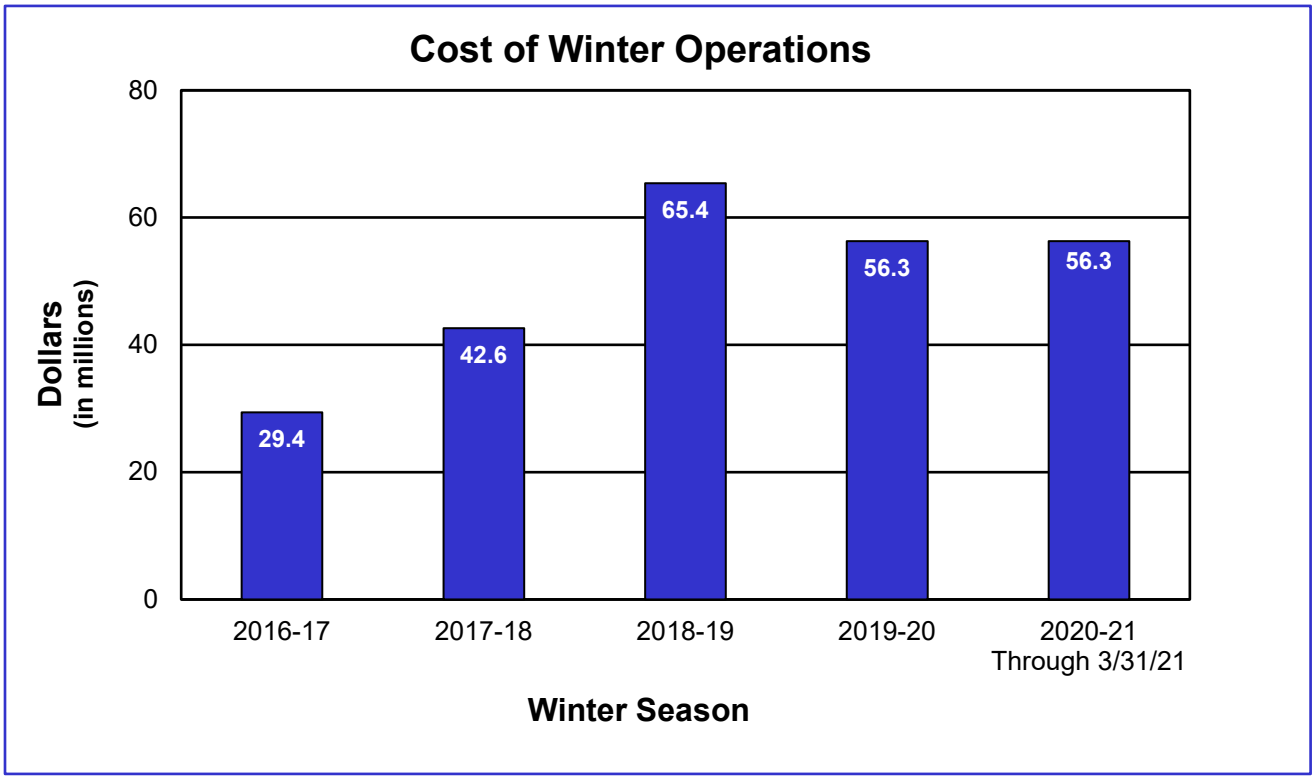
PURPOSE OF THE PROJECT:
Costs associated with over or under preparedness of severe weather events aren't easily captured and are seldomly reported. Simple atmospheric weather forecasts do not tell the whole story and, as a result, MoDOT has sometimes incurred additional costs for storms which never materialized or been caught off guard when storms arrived in advance of expectations.

Road condition prediction is a better gauge for anticipating when conditions warrant treatment and advance traveler information. By partnering with FHWA on the Integrated Modeling for Road Condition Prediction pilot project, MoDOT will be the first DOT in the country to access a simple-to-use, web-based tool that utilizes both historic real-time data to more accurately predict when road conditions are likely to deteriorate. This will enable MoDOT staff to better prepare for adverse road conditions and strategically deploy crews where they are most needed.

This tool will provide the ability to predict conditions up to eight hours in the future and, conversely, enable accurate after-action reviews of MoDOT's response. This will facilitate improved efficiency of resources and timeliness in response.

Improve Partnerships with Other State Agencies and Leverage Private Sector





Improve Partnerships with Other State Agencies and Leverage Private Sector

Traffic Management on I-270 in St. Louis

SAFETY CHAMPION:
Becky Allmeroth, Chief Safety and Operations Officer

PROJECT MANAGER
Ploisongsaeng Intaratip, Senior Traffic Studies Specialist

PURPOSE OF THE PROJECT:
One of MoDOT's major areas of focus is improving the safety of roadways. There are many factors that can cause crashes, ranging from driver behavior to roadway geometry to weather conditions. MoDOT has applied many different engineering and behavioral strategies in pursuit of safety, such as public outreach to educate younger drivers, promotion of safety campaigns, analyzing fatal and serious injury crashes to perform systemic safety improvements, and road safety audits. Despite these efforts, crashes still happen. Even with all of the roadway and crash data available to MoDOT it is difficult to predict future crash locations. MoDOT and other emergency responders must react to crashes as they happen and respond as quickly as possible from their current positions.

Predictive analytics is the integration of real-time and historical data sources into a single platform, frequently processed with the use of artificial intelligence or machine learning, for analysis and decision making in the near-term. An active construction project presents a challenge for traditional means of crash prediction due to the frequently changing roadway conditions. A predictive analytics engine can process and react to new data to quickly spot trends, allowing it to identify the circumstances which can lead to crashes before they occur. MoDOT is the first DOT in the country to focus the use of this tool in a heavy construction area with the pilot implementation on the I-270 Project in the St. Louis District.

The MoDOT predictive analytics pilot will provide the ability to predict high crash risk areas up to 24 hours in the future. This will help MoDOT to better monitor potential high crash risk areas and position its Emergency Response vehicles to be proactive in response to incidents. It will also improve safety, efficiency of resources, and response times to crashes.

Measurement Data Under Development

Pandemic Response to Maintaining Employee Safety and Health

SAFETY CHAMPION:
Becky Allmeroth, Chief Safety and Operations Officer

PROJECT MANAGER
Chris Engelbrecht, Assistant to Chief Safety and Operations Officer

PURPOSE OF THE PROJECT:
The COVID-19 pandemic has impacted the way employees perform their job functions and how they function as a team. Requirements for social distancing have forced the department to reexamine routine and emergency operational procedures to protect employees.

MoDOT is proactively identifying and adjusting its approach to operations which could jeopardize employee health and well-being. Strategies to mitigate risk include:

- Identifying alternative approaches to operations and procedures which place staff in a compromised position for maintaining social distance
- Providing interim policies for employee safety to minimize the risk of exposure to contagions
- Applying administrative guidelines and re-engineering tools and equipment to control exposure other co-workers and potentially to the virus
- Prioritizing and delaying work activities for which no safe alternative approaches have been identified
- Providing guidance and tools necessary to reopen facilities as soon as possible following cleaning and disinfection after infections are reported.
- Communicating relevant information about the virus to allow employees to make informed decisions at work and in personal settings
- Testing employees under defined circumstances to identify asymptomatic individuals and quickly contain the spread of the virus
- Offering easy no cost access to vaccinations as they become available to employees

This focus area is needed to ensure strategic planning is taking place throughout all phases of the pandemic and the resources necessary to support the response and recovery are made available. Implementing the department's Pandemic Response Plan and Continuity of Operations Plan throughout will be key to a successful response and rapid recovery.

While there is no way to accurately estimate the pandemic's total economic impact to the department, it will likely cost millions of dollars in labor and materials to modify operations and provide the tools and equipment necessary to protect employees and maintain social distancing. This does not include the

economic impact of delayed maintenance on the state's infrastructure or lost revenue due to cascading effects of the pandemic on funding streams.

This focus area will remain active until the impacts of the pandemic are minimal and department operations are able to return to pre-pandemic functions and procedures. Results will be interpreted by multiple measures including, employee infection rates (# cases over time period) and Covid-19 sentinel testing rates (# positive tests compared to total).

Measurement Data Under Development

SERVICE

Providing Outstanding Customer Service, Delivering Efficient and Innovative Transportation Projects, Operating a Reliable Transportation System

- **Improve Project Management Tools**
  - Maintenance Management System
- **Facilities Optimization Strategy Implementation**
- **Fleet Safety and Utilization with Fleet Telematics**
- **Implement Enterprise Resource Planning (ERP)**
- **Update of the State Freight and Rail Plan**
- **Pandemic Response to Maintaining Essential Services**

Improve Project Management Tools

Maintenance Management System

SERVICE CHAMPION:
Eric Schroeter, Assistant Chief Engineer

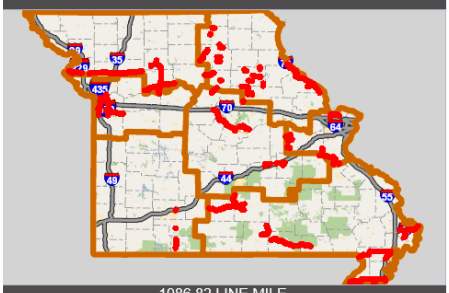
PROJECT MANAGER
Michael Middleton, Maintenance Liaison Engineer

PURPOSE OF THE PROJECT:
Maintenance staff constitutes about 54% of salaried employment at MoDOT and about 23% of MoDOT's budget is used to accomplish maintenance-related tasks. The challenges in finding maintenance-related information was substantial due to multiple software programs and difficulty in documenting work.

MoDOT has implemented the first phase of the Maintenance Management System (MMS) that is a simple to use web-based program for capturing and reporting work performed by maintenance personnel. As of March 15, 2020, all 191 maintenance areas are utilizing MMS. There are nearly 2,900 maintenance workers entering their individual daily hours worked, job location and equipment and materials usage. The data acquired from MMS provides timely results of work performed. MMS also provides one location to plan work, access current inventory quantities, evaluate status for routine equipment maintenance and easy accessibility to Safety data. The MMS Help Desk provides daily guidance to employees on MMS

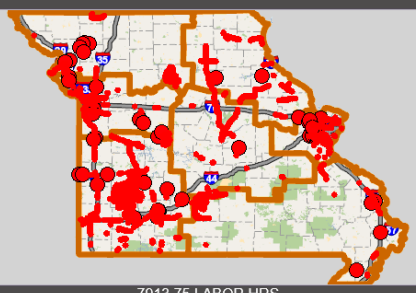
Multiple Organizations (Districts: NW, NE, KC, CD, SL, SW, SE)
Date from: 4/2/2021 to: 4/15/2021

STRIPING (R221)



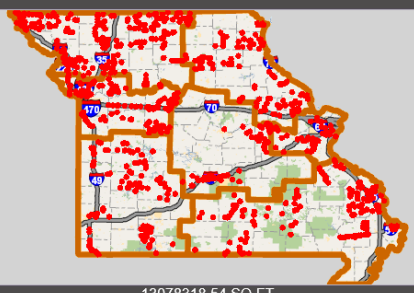
1986.82 LINE MILE
Total Estimated Costs $611,025.26
Potential Federal Reimbursement $534,249.75

LITTER PICK-UP (R411)



7913.75 LABOR HRS
Total Estimated Costs $378,052.01

BRIDGE FLUSHING AND CLEANING (R329)



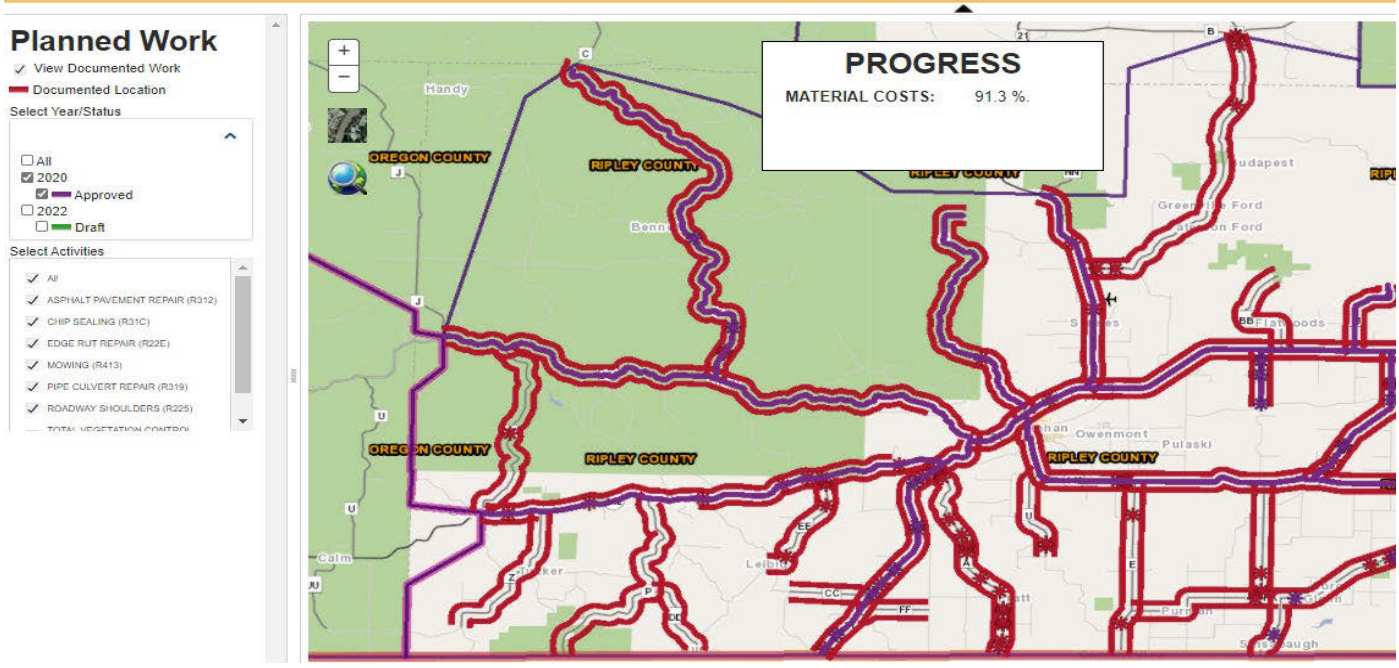
13078318.54 SQ FT
Total Estimated Costs $555,812.33
Potential Federal Reimbursement $438,289.61

Improve Project Management Tools

Phase 2: Calendar year Work Plans were implemented in November 2020 to capture planned matintenance activities and federalized activities. Work Plan Progress and Budget will be implemented in June 2021. These tools will help executive management, Central Office staff, district management, superintendents and building supervisors to easily and effectively know the status of their planned versus performed work and current Budget. Examples of Work Plan progress and Budget are shown below.

Work Plan - Map

SE DONIPHAN (7H12)



Budget

Change Area | Budget Summary | Expenditures | Home

SW SPRINGFIELD (7G51), SW BOLIVAR (7G03), SW SPEC CREW WORK RELEASE (7G79), SW MARSHFIELD (7G32), SW CASSVILLE (7G09), SW BUTLE…

Fiscal Year: 2021 | Budget Activity Class: | Search | Clear | TMS Data | Transfers

Customize Columns | Export to XLSX | Export to PDF

Dist	Budget Act Class	Budget Act Class Name	BRASS Budget Total: $23,012,203.00	DME Budget Total: $23,012,203.00	WP Est Mat Cost Total: $5,056,175.14	Doc Mat Cost Total: $7,300,699.06	SAMII Encumb Total: $3,967,908.04	SAMII Expend Total: $10,950,037.96	DME Expend Remaining Total: $5,124,955.00	% Remaining Total: 47.6 %
Dist: SW										
SW	R220	SAFER HIGHWAYS & INTERSECTIONS (R222, R224, R225, R226, R227, R228, R22A, R22M)	$334,250.00	$334,250.00		$11,365.78				100.0 %
SW	R221	STRIPING (LINE MILE)	$3,682,000.00	$3,682,000.00	$1,722,966.57	$1,838,087.05	$988,912.00	$2,179,128.31	$513,959.69	14.0 %
SW	R223	SIGNING	$640,250.00	$640,250.00		$202,508.82	$213,535.42	$555,476.04	($128,761.46)	-20.1 %
SW	R22E	EDGE RUT REPAIR (LANE MILE)	$101,250.00	$101,250.00		$4,777.14	$5,124.35	$28,814.41	$67,311.24	66.5 %
SW	R310	MAINTAIN HIGHWAYS & BRIDGES (R314, R315, R316, R317, R318, R32A)	$671,152.00	$671,152.00	$26,945.59	$58,408.82				100.0 %
SW	R311	PATCHING ROADS (TON)	$476,800.00	$476,800.00		$38,851.34	$14,969.61	$297,509.68	$164,320.71	34.5 %
SW	R312	ASPHALT PAVEMENT REPAIR (TON)	$8,115,160.00	$8,115,160.00	$2,564,630.18	$4,135,826.16	$2,085,522.60	$5,762,598.57	$267,038.83	3.3 %
SW	R313	CONCRETE REPLACEMENT (SQ YD)	$176,500.00	$176,500.00	$36,268.45	$1,219.09	$16,905.40	$243,880.33	($84,285.73)	-47.8 %
SW	R319	PIPE CULVERT REPAIRS (LINER FE	$515,800.00	$515,800.00	$212,671.98	$24,912.94	$82,323.19	$305,344.89	$128,131.92	24.8 %
SW	R31B	SWEEPING (LANE MILE)	$25,500.00	$25,500.00		$16.43	$0.00	$19,072.97	$6,427.03	25.2 %
SW	R31C	CHIP SEALING (LANE MILE)	$1,767,200.00	$1,767,200.00	$410,375.20	$689,973.00	$2,778.20	$626,880.62	$1,137,541.18	64.4 %
SW	R320	MAINTAIN BRIDGES (R321, R325, R326)	$98,900.00	$98,900.00		$292.95				100.0 %
SW	R322	BRIDGE PREVENTATIVE MAINTENANC	$166,341.00	$166,341.00	$78,639.17	$40,182.84	$78,553.30	$25,549.06	$62,238.64	37.4 %

Facilities Optimization Strategy Implementation

Facilities Optimization

SERVICE CHAMPION:
Eric Schroeter, Assistant Chief Engineer

PROJECT MANAGER:
Levi Woods, Central Office General Services Manager

PURPOSE OF THE PROJECT:
Facilities Optimization provides a similar asset management process for MoDOT facilities as is used by the Department for roadways. Like the Statewide Transportation Improvement Program, MoDOT facilities assets are placed into a rolling five-year budget based on needs. Facilities are currently funded at $7.2 million annually for Capital Improvement and Asset Management purposes. The charts depict MoDOT's progress toward meeting the goal of having facilities that meet minimum functional needs and the facility systems maintained which keep the facility operational.

Facilities staff utilizes Vanderweil Facility Advisor, a computer-based program, to inventory, with age and condition of all buildings and improvements. Individual systems within the building are inventoried, with all units having a specified lifecycle. Based on actual annual inspections, the asset's lifecycle is determined to be either due for early replacement, replace at end of calculated life, or the lifecycle can be extended based on actual observed conditions. These options allow MoDOT the flexibility to optimize and maximize the useful life of each asset.

Facilities Asset Management and the Long Term Facilities Plan are currently funded at $7.2 million annually. In 2014, the Long-Term Facilities Planning Team recognized in order to be functional and operate, facilities have many necessities including space for mechanics to work inside during inclement weather, adequate restrooms for employees, sufficient meeting space for muster sessions and cold storage for operational supplies and equipment. Due to ever changing conditions at MoDOT facilities, the Long Term Facilities Planning Team reviews the needs and allocation of funds for each program on an annual basis. Funds are then allocated to the Capital Asset Preservation Plan (CAPP or Asset Management) and the Long Term Facilities Plan (Capital Improvement Plan- CIP). The $7.2 million budget is allocated based on needs with $6.85 million allocated to the CAPP and CIP Plans, with the remaining funds available for asset management of weigh scales, rest area/welcome centers and design consultants.

Facilities Optimization Strategy Implementation

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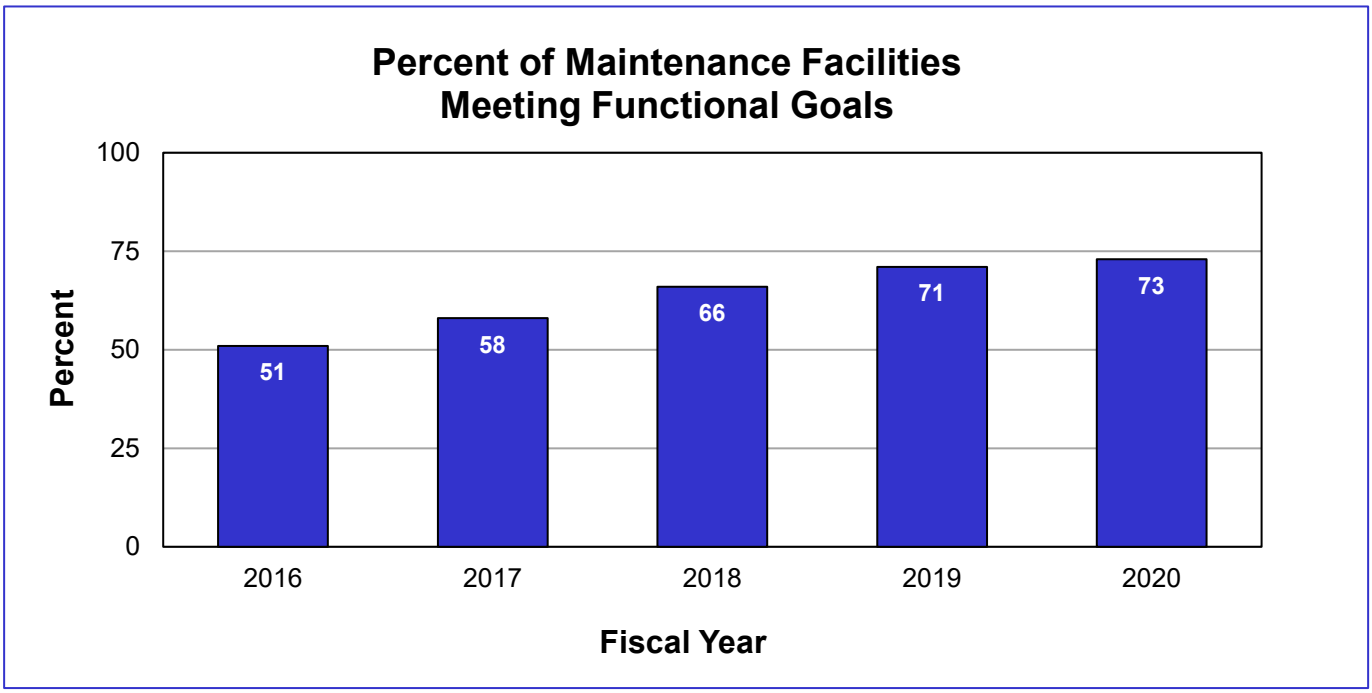
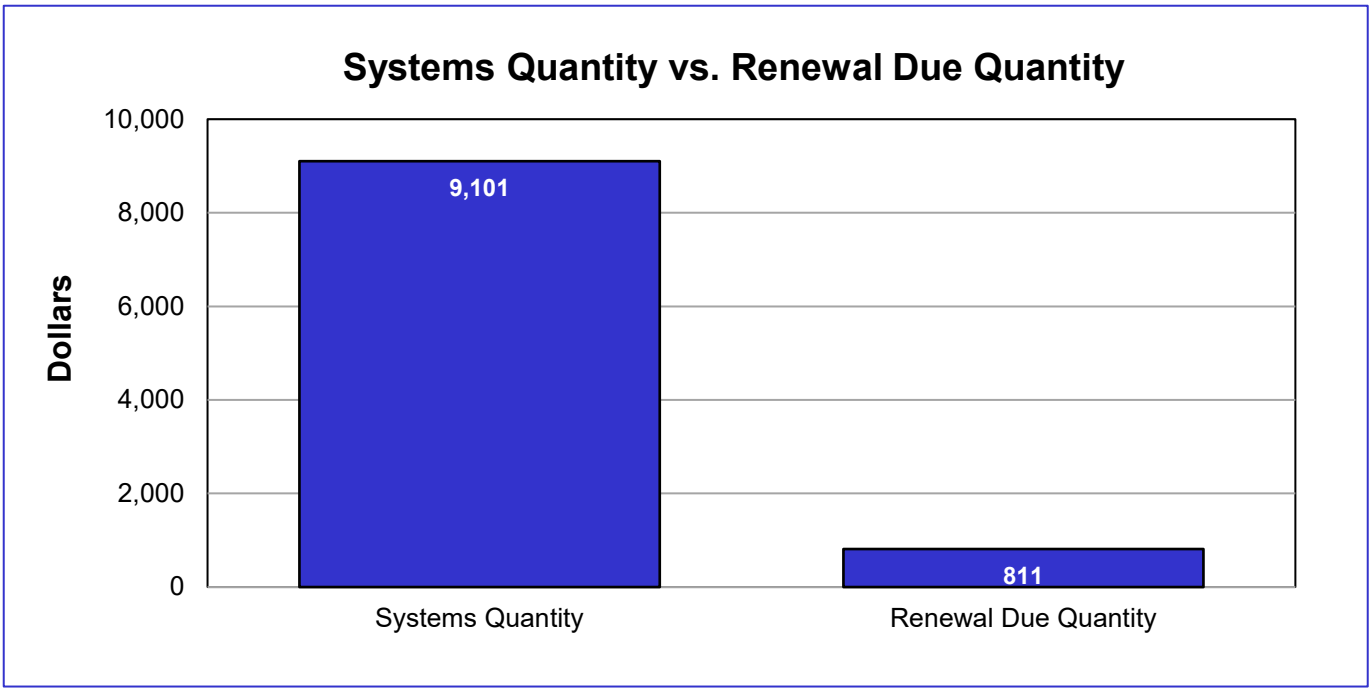
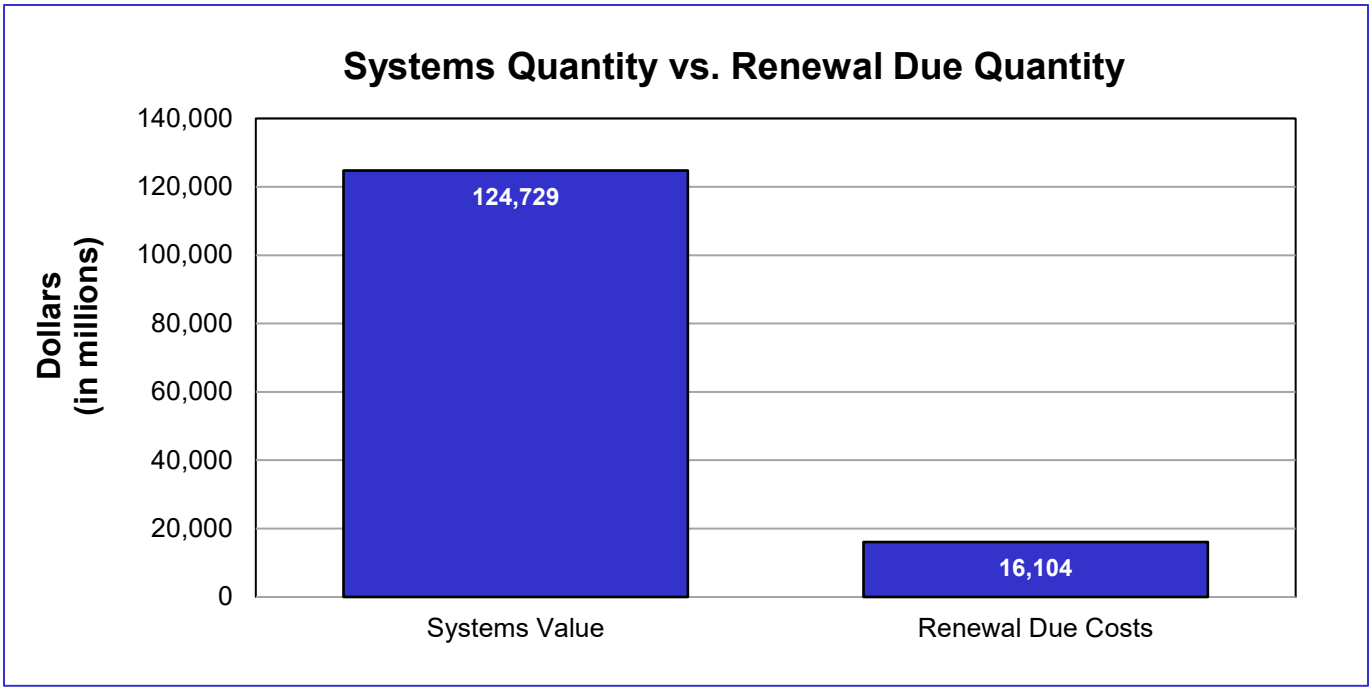




Facilities Optimization Strategy Implementation



Fleet Safety and Utilization with Fleet Telematics

Utilization of Telematics for Employee Safety

SERVICE CHAMPION:
Eric Schroeter, Assistant Chief Engineer

PROJECT MANAGER:
Paul Denkler, Central District Assistant District Maintenance Engineer

PURPOSE OF THE PROJECT:
The purpose of this initiative is to create a mechanism to measure and track the benefits and efficiencies of a telematics solution as it relates to MoDOT's vision and core values of Safety, Service and Stability. MoDOT's fleet of cars, trucks and off-road equipment serve 114 counties and approximately 34,000 centerline miles of highway. To better manage the safety, productivity and utilization of this diverse fleet, MoDOT is instituting the use of telematics in all seven districts.

Telematics, also referred to as Automatic Vehicle Locator/Global Positioning System (AVL/GPS), is the joining of two sciences, telecommunication and informatics (computer processing). Telematics is a method of monitoring an asset (car, truck, heavy equipment) by using GPS and onboard diagnostics to transmit vehicle information through cellular towers to a centralized server (computer) where the information is collected, processed, organized and then displayed on a computerized map in a browser.

MoDOT is always looking to the future to take safety to the next level for our employees and the travelling public. Reports have shown that U.S. employers spend billions of dollars annually as a result of bad driving behaviors. These are direct crash related expenses which include medical care, liability claims, lost production and property damage. Protecting employees from motor vehicle crash injuries by eliminating at risk behaviors not only allows everyone to go home safe but can also be a profitable investment of time and resources. A report published by the Network of Employers for Traffic Safety (NETS) showed that there are five at-risk driving behaviors that cost employers the most: speeding, distracted driving, harsh braking, not using a seat belt and alcohol related motor vehicle crashes. Of these, speeding and distracted driving are the top two most costly behaviors. Telematics will provide information necessary to prevent incidents from occurring and assuring the safety of our workers as well as all Missouri travelers.

Industry research has also shown that telematics can improve fleet productivity and utilization by reduced fuel consumption and maintenance costs. According to an August 2017 Alternative Fuels Data Center Report, aggressive driving behaviors can reduce fuel efficiency by up to 20%. Other reports have shown that vehicle maintenance costs can be cut up to 14% when using telematics as part of a greater fleet

management program. This information can translate into savings on maintenance costs by reducing the wear and tear on a vehicle or improving fuel efficiency with improved driving behaviors.

Telematics will provide the tools to improve the operating efficiency of MoDOT fleet and increasing safety for the traveling public by implementing a Proactive Traffic Safety program that will allow:

- drivers to modify their own behavior through one-on-one coaching based on real-time vehicle information,
- drivers access to new tools such as in cab audio alerts so they can self-manage their own driving behaviors and
- supervisors to generate driver behavior reports or scorecards to be used as a baseline and means to show an employee their improvement over time.

These tools will enable employees to self-manage their driving behavior. Imagine having a highly advanced computer as a passenger or co-pilot in your vehicle that is able to alert you to details such as speed and location, to idling and fuel use, harsh braking, harsh cornering, seat belt use, possible collision, engine diagnostics and more. With the implementation of a telematics solution, MoDOT will be able to enhance the tangible results it delivers to its customers while improving the safety, productivity and utilization of its diverse fleet.

Measurement Data Under Development

Implement Enterprise Resource Planning

Statewide ERP Implementation

SERVICE CHAMPION:
Eric Schroeter, Assistant Chief Engineer

PROJECT MANAGER
Suzette Kempker, Project Director

PURPOSE OF THE PROJECT:
The current SAM II Financial and HR/Payroll system used by state agencies for accounting, budget, procurement, payroll and human resource management was implemented in 1999. SAM II is outdated, difficult to support and no longer satisfies the needs of Missouri state government. Missourians expect to conduct business and interact with the State of Missouri via modern means using online services and mobile devices. A new Enterprise Resource Planning (ERP) tool will assist Missouri state government with a digital transformation and serve as a foundation for continued e-government initiatives. The Office of Administration has initiated the procurement process for a new ERP tool that will replace the existing SAM II Financial and HR/Payroll systems. This is a statewide effort and state agencies have been advised to make plans to dedicate resources to the project.

MoDOT has many unique business requirements that distinguish it from other state agencies. These requirements include, producing audited CAFR, FHWA project billing, extensive use of consumable inventories to manage highway maintenance and sign activities, statutory procurement authority to issue formal bids, management of MoDOT/MSHP medical and life benefits, as well as the management of pay policies and salary grid. The selection of the new ERP solution and the successful implementation will be crucial for MoDOT to continue to operate and manage resources in an efficient and fiscally responsible manner.

MoDOT's Executive Team recognizes the significance of this statewide effort to the department's business continuity plan and has made the commitment to dedicate the necessary resources to participate alongside the statewide team to ensure a successful outcome for the department. The Office of Administration is working with a consultant, ISG (Information Services Group), on the approach for procuring a new ERP system. There will be two contracts, a software contract and a services contract to implement/integrate the selected software. Proposals for the software contact are under review for evaluation. The projected date for an award of the software contract is second quarter 2021. The award of the services contract is fourth quarter of 2021. The implementation project is anticipated to span 3-5 years. It is expected that Budget, Financial and Procurement modules will be implemented first with a projected 24-month implementation period. HR/Payroll will follow and is also expected to take 24 months to implement.

Measurement Data Under Development

State Freight and Rail Plan Update

SERVICE CHAMPION:
Eric Schroeter, Assistant Chief Engineer

PROJECT MANAGER
Cheryl Ball, Administrator of Freight and Waterways

PURPOSE OF THE PROJECT:
The State Freight and Rail Plan (SFRP) Update develops a document to further the Long-Range Transportation Plan (LRTP) goal of investing in projects that spur economic growth and create jobs. It also provides data to inform decisions to accomplish the other four LRTP goals of taking care of the system, keep travelers safe, give Missourians transportation choices and improve reliability and reduce congestion of the transportation system. When completed in late fall 2021, this plan will provide information and guidance for investment decisions at MODOT to enhance the passenger rail and all modes of freight movement in the state.

MoDOT has a multi-division team guiding the development of the $2 million SFRP Update consultant contract. This team assures the project includes tools providing freight-related data such as tonnage, value and importance of segments to the Missouri business supply-chain. This data will be provided in formats to assist divisions incorporating the information into their decision-making processes. The public engagement from the SFRP Update assists MoDOT in making timely selections for freight-focused discretionary grant applications.

Title 23 and 49 of the U.S. Code requires each state to have current State Freight Plan and a State Rail Plan to access portions of the federal funds and apply for multiple discretionary grants.

Measurement Data Under Development

Pandemic Response to Maintaining Essential Services

Delivering Critical Functions during COVID-19 Pandemic

SERVICE CHAMPION:
Eric Schroeter, Assistant Chief Engineer

PROJECT MANAGER
Natalie Roark, State Maintenance Director

PURPOSE OF THE PROJECT:
The COVID-19 pandemic has impacted the delivery of services across the state. All throughout the pandemic, MoDOT Operation and Construction forces reported to work to deliver the critical operational needs for Missouri's transportation system, maintaining over 34,000 miles of highway. MoDOT is taking proactive steps to ensure the critical services continue while allowing the continued maintenance of facilities, responsible oversight of projects and programs and continuity of customer service. Throughout the pandemic it is crucial to identify and implement strategies to ensure program delivery and maintenance of core activities. Likewise, continued communication and collaboration is critical to identify and prioritize any work which can be delayed ensuring delivery of critical services and activities. General everyday guidelines have been developed for vehicle usage, face coverings, traffic control, general work site practices, parking at the jobsite and cleaning instructions for buildings, equipment and tools, to name a few. These efforts must continue throughout the pandemic. It's prudent to prioritize mission critical functions within the Continuity of Operations Plan to deliver a safe and reliable transportation system. MoDOT will continue to focus and plan that key essential workers with critical skills are trained and available throughout the coronavirus pandemic to keep the transportation network operational for the state of Missouri.

Measurement Data Under Development

STABILITY

Managing Our Assets, Stabilizing Resources and Engaging our Workforce, Building a Prosperous Economy for All Missourians

- **Increase Employee Engagement and Recognition**
  - Training and Certifications
- **Research and Deploy Alternative Funding Solutions**
  - Cross-cabinet Collaboration
- **Leverage Innovations to Reduce Costs and Improve Service Quality**
- **SIMS Modernization – Final Phases**
- **FACS – Phase II**
- **Pandemic Response to Cost Control**

Increase Employee Engagement and Recognition

Employee Engagement and Cost of Turnover

STABILITY CHAMPION:
Lester Woods, Chief Administrative Officer

PROJECT MANAGER:
Kim Larimore, Human Resources Administrator

PURPOSE OF THE PROJECT:
Employee turnover not only has a direct impact on MoDOT's ability to preserve and operate a reliable transportation system but also reflects the level of employee engagement within MoDOT. Increasing employee engagement and reducing turnover and its subsequent costs are prudent goals toward organizational stability and wise use of taxpayer dollars.

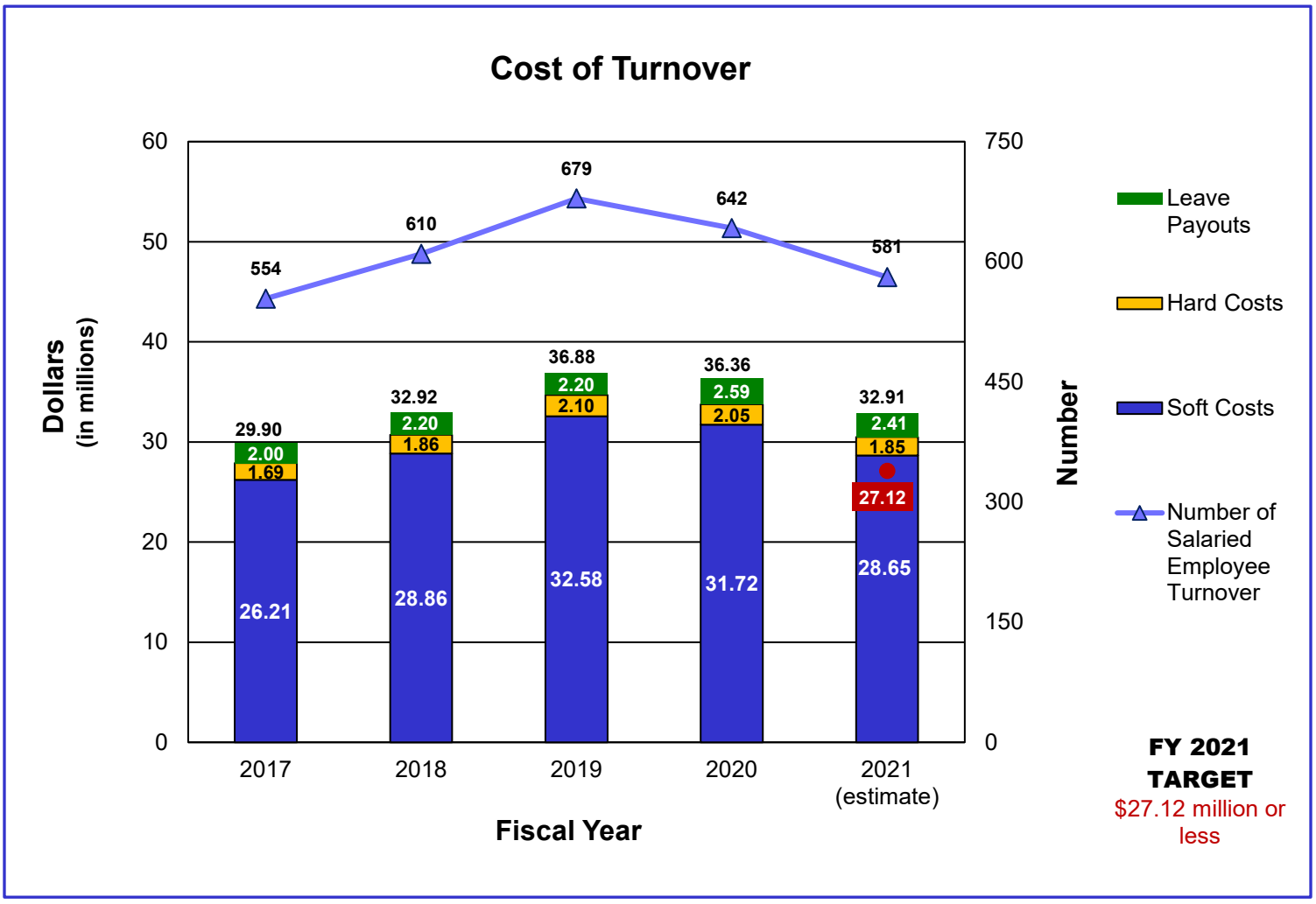
For the first three quarters of FY 2021, MoDOT turned over 436 employees. This places MoDOT on track to turn over an estimated 581 employees for FY 2021. This would be a 11.64% projected turnover rate for FY 2021, which can be compared to the 12.57% turnover rate in FY 2020. Applying a Society for Human Resources Management "turnover cost calculator" to the estimated employee turnover number for FY 2021, we can anticipate the estimated hard cost of backfilling these positions to be $1.85 million and the estimated soft cost to be $28.65 million. For the same period, the leave payout of turnover is estimated to be $2.41 million. That is an estimated total turnover cost of $32.91 million for FY 2021, which is a 10.48% decrease compared to the FY 2020 actual costs.

Efforts to improve the stability of MoDOT by increasing employee engagement and retention have been implemented and continue.

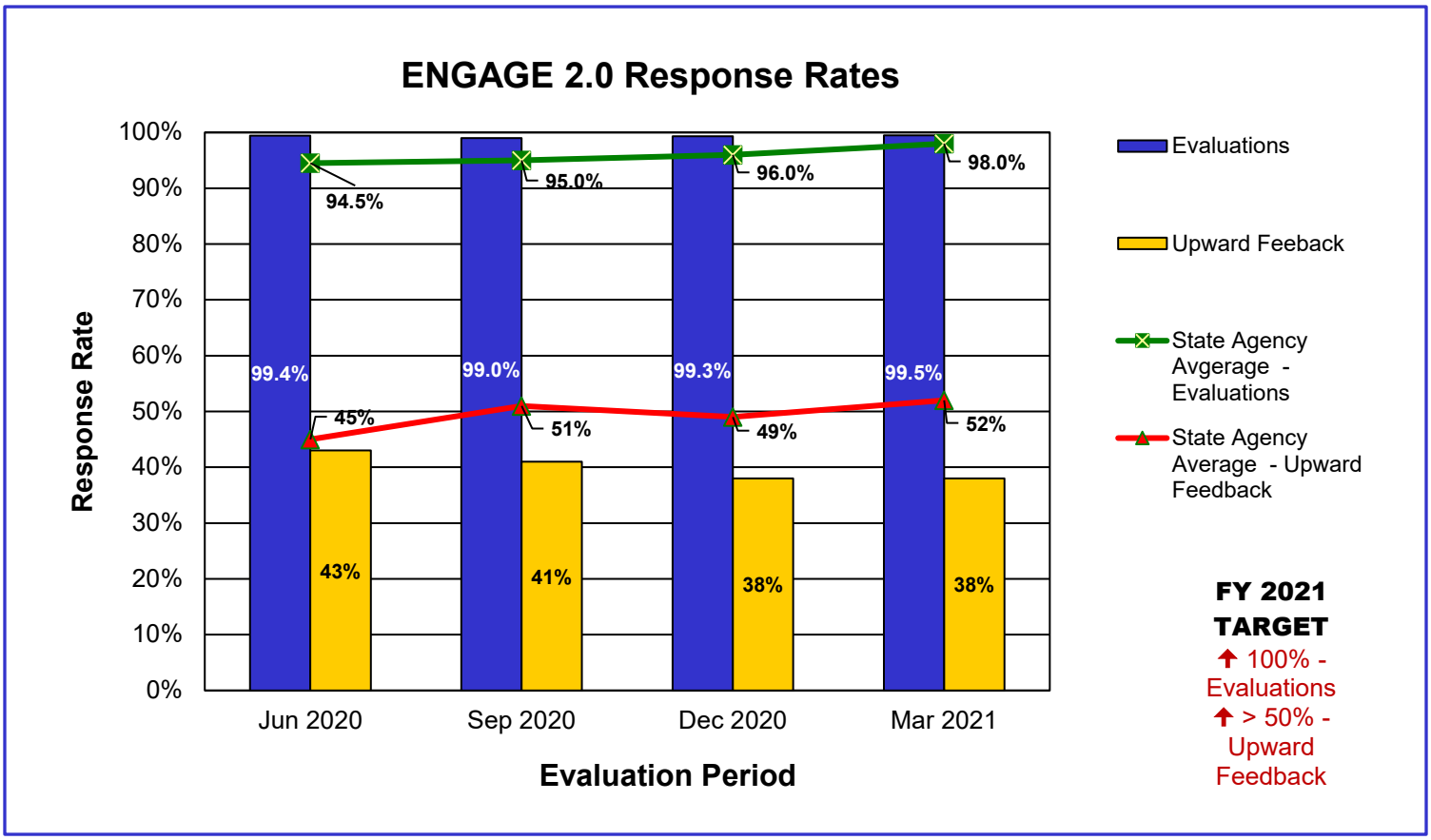
- **Training and Certifications:**
  - **Registered Apprenticeship Program**: A team met with the Front Range Community College Director of Highway Maintenance to begin the process of creating course equivalencies using MoDOT's maintenance training in hopes to move one step closer in the efforts to establish college credit for employees who complete the registered apprenticeship program with MoDOT. This process is still underway and involves establishing course descriptions, competencies, and assessments among other criteria. In March, a promotional campaign of the program took place, which included testimonials from graduates. The campaign was developed to help increase enrollment in both the Department of Labor and Veteran's Affairs programs for maintenance employees. Enrollment is officially open. Currently 4 employees are enrolled in the program, and 19 employees completed the program in FY 2020.

Increase Employee Engagement and Recognition

- **Performance Development:** Performance development is the process of managing performance through setting and monitoring expectations; planning and monitoring employee development; coaching employees regarding performance; and providing continuous feedback to employees.
    - MoDOT implemented ENGAGE 2.0 into our current performance development program in June 2020. The tool makes professional development more central to how we work every day while encouraging a culture of coaching and growth.
    - For the March 2021 evaluation period of ENGAGE 2.0, the department ended with a 99.5 percent completion rate for evaluations. This was a slight increase compared to last quarter evaluations. The department ended with a 38 percent response rate for upward feedback. This was no change compared to the last quarter of upward feedback. The department continues to be above that of the state agency average on the completion rate for evaluations but remains below in response rate for upward feedback. The department will continue to promote the importance of employees completing upward feedback to strengthen department leadership.



Increase Employee Engagement and Recognition



Research and Deploy Alternative Funding Solutions

Cross-Cabinet Collaboration

STABILITY CHAMPION:
Lester Woods, Chief Administrative Officer

PROJECT MANAGER:
Liz Prestwood, Policy/Innovation Program Manager

PURPOSE OF THE PROJECT:
The current Missouri vehicle registration fee is based on taxable horsepower, an archaic measure which bears no correlation with vehicle power, vehicle weight or impact caused on infrastructure. Missouri is the only state using taxable horsepower to assess vehicle registration fees.

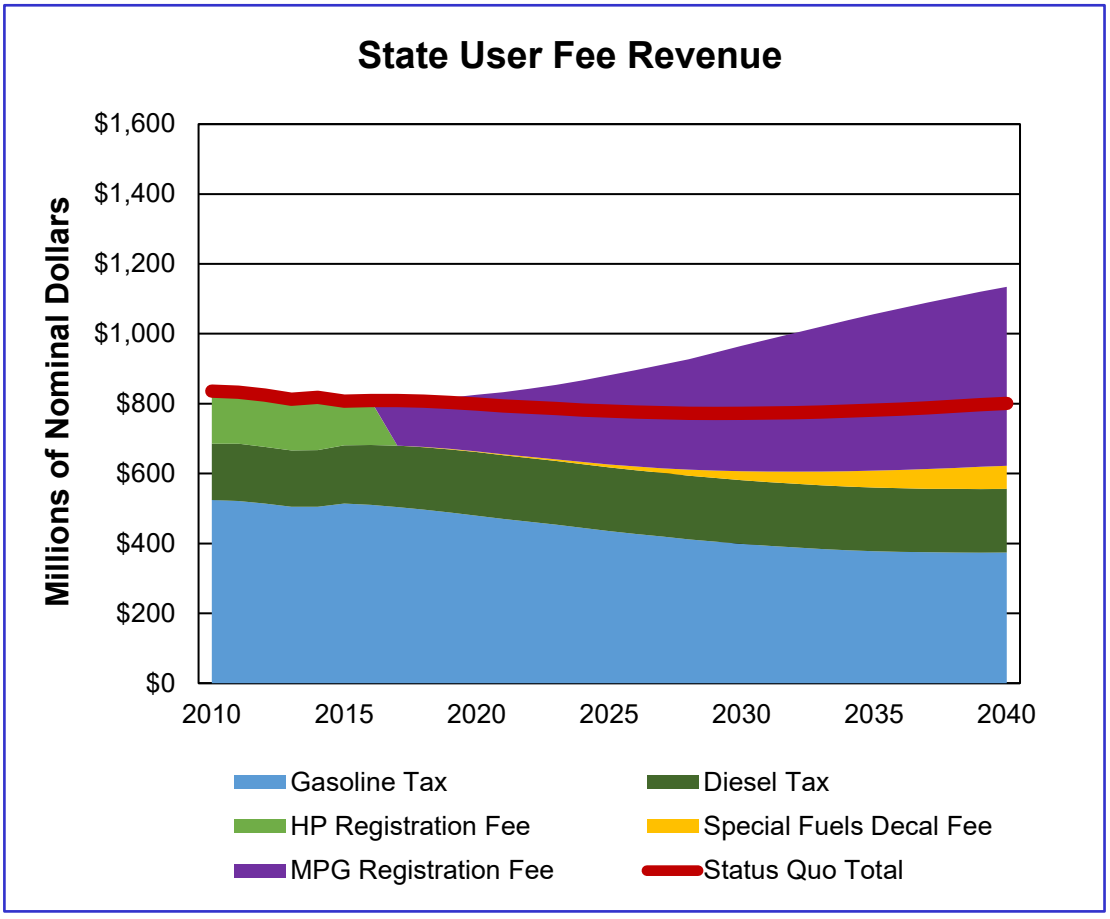
Missouri has been the recipient of three consecutive Surface Transportation System Funding Alternative (STSFA) federal grants totaling $4,805,000. The first award was to perform pre-deployment activities for concept feasibility in the amount of $250,000. Phase two award provided $2,772,500 and is being used to determine existing system capabilities for implementation and further investigates the impacts to Missouri residents through a Highway Cost Allocation and Revenue Attribution Study (HCARAS) and Rural Urban Transportation Funding Analysis. In 2019, MoDOT received a third STSFA award in the amount of $1,782,500 for the design and implementation of an MPG based registration fee. During the summer of 2020, MoDOT submitted a fourth grant proposal to receive additional funding to perform system modernization to collect the proposed MPG based registration fee. These grant awards should be announced by the end of the year.

The initial work and deliverables from the Department's STSFA activities modeled how an MPG-based fee could be used to supplement and/or replace the current registration fee schedule. The project team began work with Missouri Department of Revenue in 2018 to explore existing system capabilities to collect this type of fee and identify gaps. This DOR-led study concluded in January 2019. The consultant presented five options of varying costs to implement an MPG-based fee structure. This cross-cabinet effort is ongoing and the preferred implementation option has not been selected. Legislation was filed in the 2019, and the 2020 Missouri General Assembly supports this MPG-based registration fee. Due to COVID-19, the Missouri General Assembly ended their session early and only addressed critical bills like passing the state's budget.

To fully understand impacts of an MPG based registration fee, two additional studies have been completed. A revenue study demonstrated the typical impacts (per year, per mile, per driver, etc.) of highway use and will provided a quantitative basis for the fees attributed to non-gasoline and non-diesel vehicles. As a result of this study, the fee structure proposed has been adjusted to more equitably distribute the cost among highway users. The second study analyzed fees paid by rural and urban drivers under the proposed MPG-based registration fee system, considering the commuting behaviors and vehicle characteristics of highway users statewide. This study showed that urban drivers pay more in commuting costs based on the vehicle profiles and number of miles driven each year.

Research and Deploy Alternative Funding Solutions

The principal project goals are to generate revenue consistent with technological trends in the motor vehicle market and to ensure privacy and security for Missouri drivers while utilizing current adaptable technologies to collect and administer the fee.



Leverage Innovation to Reduce Costs and Improve Service Quality

STABILITY CHAMPION:
Lester Woods, Chief Administrative Officer

PROJECT MANAGER:
To be Determined

PURPOSE OF THE PROJECT:

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Measure Under Development

STIP Information Management System Modernization - Final Phases

SIMS Modernization

STABILITY CHAMPION:
Lester Woods, Chief Administrative Officer

PROJECT MANAGER:
Amy Binkley, Planning and Programming Coordinator

PURPOSE OF THE PROJECT:
MoDOT's first Transportation Management Systems software was implemented in 1998. At that time, TMS consisted of four major business areas which included Safety, Traffic, Bridge and Pavement. Over the years, TMS has expanded to meet the needs of many business units and users. MoDOT continues to build on these applications and tools to assist with making its business, project and financial decisions.

In 2013, MoDOT began an effort to rewrite the TMS applications into modern software platforms. This project is referred to as "TMS Modernization" which includes the STIP Information Management System. The SIMS project began in 2019 to modernization the current platform which is no longer being supported. Older platforms do not provide the cyber security aspects of modern models, nor do they provide the budgeting and reporting capabilities of newer applications. SIMS is scheduled to be completed by the fall of 2021. The modernized application will be fully implemented for the 2023-2027 STIP.

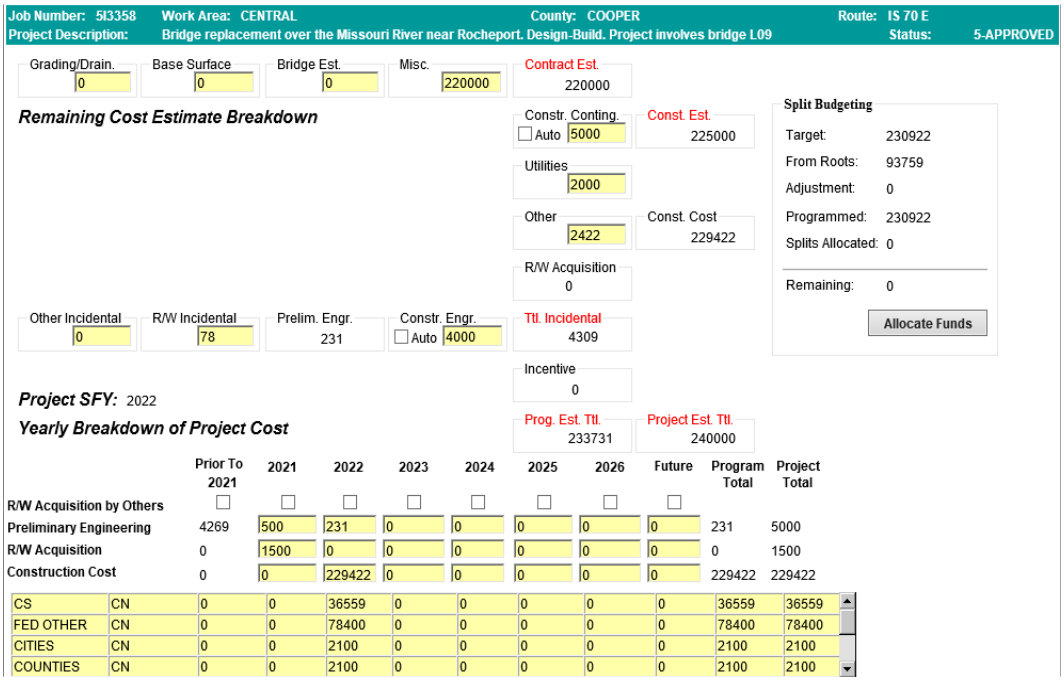
Benefits of the final SIMS modernization phases are:

- reduces costs for licensing, maintenance and updates.
- providing ease of troubleshooting, maintenance and updates.
- providing for future upgrades and keeping the system to current standards in a timely manner.
- implementing user-requested enhancements, such as interactive reporting, automating manual processes and improved results tracking for asset management, capital improvement and safety projects.
- providing more efficient tracking of federal aid, federal obligations, balance sheet, budget administration, actual cost, notifications and STIP reporting.

An additional enhancement of SIMS modernization is its ability to provide updated budget administration on STIP projects. The current system shows budget information in an outdated format using terminology such as Grading/Drain, Base Surface, Bridge Estimate and miscellaneous. The new application will provide dollar amounts under specific project descriptions such as Typical and Major Bridges, Pavement, Safety and Mobility. See the following illustrations.

STIP Information Management System Modernization - Final Phases

Old SIMS budget page:



Job Number: 5I3358 Work Area: CENTRAL County: COOPER Route: IS 70 E
Project Description: Bridge replacement over the Missouri River near Rocheport. Design-Build. Project involves bridge L09 Status: 5-APPROVED

Grading/Drain. 0 | Base Surface 0 | Bridge Est. 0 | Misc. 220000 | Contract Est. 220000

Remaining Cost Estimate Breakdown

Constr. Conting. Auto 5000 | Const. Est. 225000
Utilities 2000
Other 2422 | Const. Cost 229422
R/W Acquisition 0

Split Budgeting
Target: 230922
From Roots: 93759
Adjustment: 0
Programmed: 230922
Splits Allocated: 0
Remaining: 0
Allocate Funds

Other Incidental 0 | R/W Incidental 78 | Prelim. Engr. 231 | Constr. Engr. Auto 4000 | Ttl. Incidental 4309
Incentive 0

Project SFY: 2022

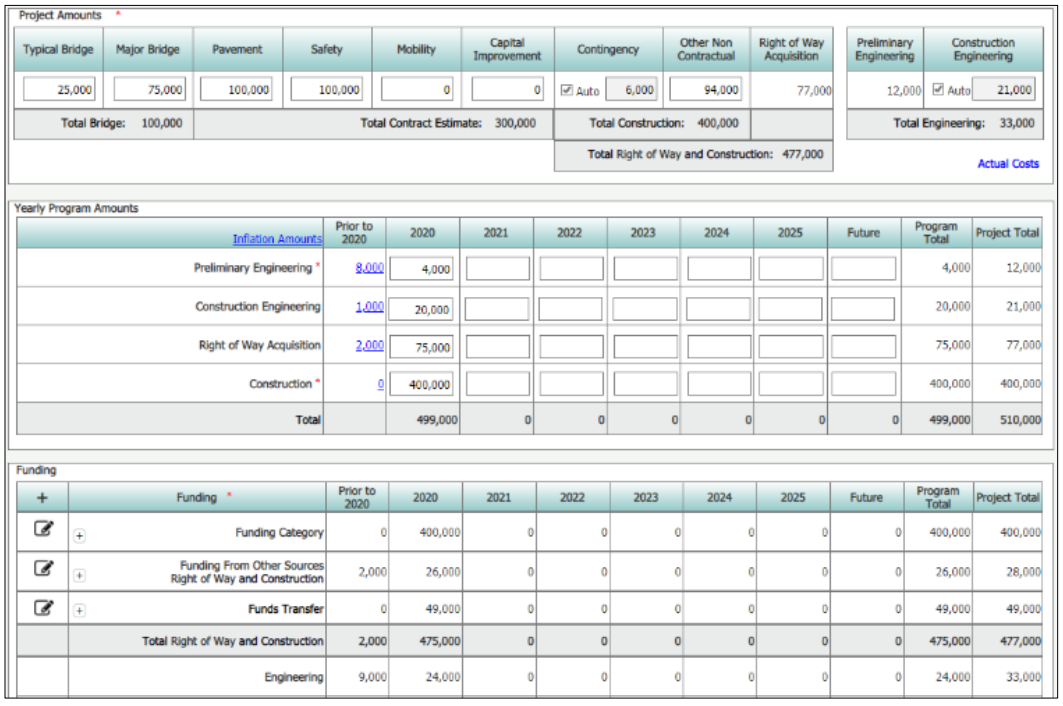
Yearly Breakdown of Project Cost

Prog. Est. Ttl. 233731 | Project Est. Ttl. 240000

	Prior To 2021	2021	2022	2023	2024	2025	2026	Future	Program Total	Project Total
R/W Acquisition by Others	☐	☐	☐	☐	☐	☐	☐	☐		
Preliminary Engineering	4269	500	231	0	0	0	0	0	231	5000
R/W Acquisition	0	1500	0	0	0	0	0	0	0	1500
Construction Cost	0	0	229422	0	0	0	0	0	229422	229422

CS	CN	0	0	36559	0	0	0	0	0	36559	36559
FED OTHER	CN	0	0	78400	0	0	0	0	0	78400	78400
CITIES	CN	0	0	2100	0	0	0	0	0	2100	2100
COUNTIES	CN	0	0	2100	0	0	0	0	0	2100	2100

New SIMS budget page:



Project Amounts *

Typical Bridge	Major Bridge	Pavement	Safety	Mobility	Capital Improvement	Contingency	Other Non Contractual	Right of Way Acquisition	Preliminary Engineering	Construction Engineering
25,000	75,000	100,000	100,000	0	0	Auto 6,000	94,000	77,000	12,000	Auto 21,000

Total Bridge: 100,000 | Total Contract Estimate: 300,000 | Total Construction: 400,000 | Total Engineering: 33,000
Total Right of Way and Construction: 477,000
Actual Costs

Yearly Program Amounts

Inflation Amounts	Prior to 2020	2020	2021	2022	2023	2024	2025	Future	Program Total	Project Total
Preliminary Engineering *	8,000	4,000							4,000	12,000
Construction Engineering	1,000	20,000							20,000	21,000
Right of Way Acquisition	2,000	75,000							75,000	77,000
Construction *	0	400,000							400,000	400,000
Total		499,000	0	0	0	0	0	0	499,000	510,000

Funding

+	Funding *	Prior to 2020	2020	2021	2022	2023	2024	2025	Future	Program Total	Project Total
✎	⊕ Funding Category	0	400,000	0	0	0	0	0	0	400,000	400,000
✎	⊕ Funding From Other Sources Right of Way and Construction	2,000	26,000	0	0	0	0	0	0	26,000	28,000
✎	⊕ Funds Transfer	0	49,000	0	0	0	0	0	0	49,000	49,000
	Total Right of Way and Construction	2,000	475,000	0	0	0	0	0	0	475,000	477,000
	Engineering	9,000	24,000	0	0	0	0	0	0	24,000	33,000

Federal Aid Computer System – Phase II

FACS Phase II

STABILITY CHAMPION:
Lester Woods, Chief Administrative Officer

PROJECT MANAGER:
Doug Hood, Assistant Financial Services Director

PURPOSE OF THE PROJECT:
Managing our assets efficiently and effectively has a direct impact on MoDOT's ability to preserve and operate a reliable transportation system. MoDOT's assets not only include infrastructure (roads and bridge), but also employees and the systems they use. Improving the systems MoDOT employees use and reducing duplication of work are prudent goals toward organizational stability and wise use of taxpayer's dollars.

The development and implementation of FACS Phase II will improve efficiencies by compiling and sharing data between MoDOT districts and divisions as well as the Federal Highway Administration (FHWA). It will also reduce duplication of effort and increase the availability of data to districts and divisions, while reducing opportunities for errors and improving communication.

The following results are expected with the implementation of FACS Phase II:

- **Implement Electronic Data Sharing (EDS) with FHWA's Fiscal Management Information System (FMIS):** EDS can automatically upload obligation data from FACS to FHWA's FMIS which eliminates the need for manual entry. EDS will decrease data entry errors and reduce review time researching and correcting errors. In order to implement EDS, various FACS modules need to be modified.
- **Integrating Project Data from Other Systems:** The Financial Services Division obtains environmental and right of way data from multiple divisions and districts to ensure federal requirements are met before obligating federal funds. Phase II will interface with the environmental and right of way systems, reducing the need for divisions and districts to provide data to FS.
- **Improved Accessibility to FACS Information:** MoDOT divisions and districts utilize FACS in administering the Local Public Agency (LPA) Program. After each obligation, the Financial Services Division provides a summary document to the LPA staff by email. Each subsequent obligation for the project in FACS, overwrites the summary document. Phase II will provide automatic storage of each summary document to a database, making historical information available and accessible to users. In addition, this eliminates the need to manually provide the summary document via email.

Pandemic Response to Progressive Cost Control

Pandemic Response to Cost Savings

STABILITY CHAMPION:
Lester Woods, Chief Administrative Officer

PROJECT MANAGER:
Jeff Ball, Central Office General Services Manager

PURPOSE OF THE PROJECT:
Like so many other individuals and entities, the coronavirus pandemic caused a loss of revenue to state departments of transportation, including MoDOT. Actual state highway-user revenue for motor fuel, motor vehicle sales and motor vehicle and driver's licenses was approximately $38 million less than projected for state fiscal year 2020.

To address the revenue shortfall, the department cut back discretionary spending on equipment, materials and supplies and slowed new hiring. The deferral or cancellation of purchases saved the department approximately $9 million. Delayed replacement hiring saved the department $16 million. In addition, about 1,000 MoDOT employees opted to take a 5% pay cut from mid-June to mid-July, while others chose to work reduced hours and participate in the Department of Labor and Industrial Relations' Shared Work Program. These actions allowed the department to save $14 million toward the deficit caused by COVID-19.

In total, these actions saved $39 million to offset the $38 million revenue shortfall which enabled MoDOT to lessen the financial impact of the pandemic.

Measurement Data Under Development